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# Report to STAKEHOLDERS

<http://www.edwards.af.mil/penvmng/index.html>

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A base archaeologist finds the largest slate pendant to date at Edwards Air Force Base while on a weekend range ride!



**FOUND** — Top, is a photo of unexploded ordnance (UXO) with a visible fuse. It is UXO like this that the Department of Defense's Military Munitions Response Program is researching at Edwards Air Force Base. Environmental Management's Restoration Branch will clean up UXO from past practices and operations of weapons training prior to 2001.

**LOCK AND LOAD** — U.S. Armed Forces workers load a concrete bomb onto a World War II plane for training.



Full coverage on Pages 4, 5 and 6

**Q.** Are printer and toner cartridges recyclable? If so, what can those who work on base do to recycle them? What about those who live on base, what do they do?



If you have a question about the Edwards Air Force Base Environmental Management program, you may address it to Stakeholders Forum, Attn: Gary Hatch or Miriam Horning, 5 E. Popson Ave., Edwards AFB, CA 93524-8060, or send e-mail to: [gary.hatch@edwards.af.mil](mailto:gary.hatch@edwards.af.mil)



**COLLECTED AND BALED**  
Printer and toner cartridges like the ones seen here are collected at base industrial complexes and prepared for the recycler.

### Next RAB Meeting

**Feb. 16, 2006**

**5:30 p.m.**

**North Edwards  
Location To Be Determined**

**The public is invited.**

**A.** Printer and toner cartridges are recyclable. For industrial complexes on Edwards Air Force Base (AFB) there is usually a collection box placed near the bins for collecting other recyclables. The base recycler will come by on a regular basis to pick up these items. The cartridges go to the recycling center where they are baled and sent to a buyer.

For Base Housing residents who are interested in recycling printer and toner cartridges, the easiest way to do it is to place them into the regular recycling receptacles that are located at each housing complex on base. The base recycling center will sort out base recyclables once received.

For more information on recycling contact Environmental Management at (661) 277-1401 or the Edwards AFB Recycling Center at (661) 277-3867.

RTS

*Report to Stakeholders* is a publication of the Edwards AFB Environmental Management Division. Its purpose is to inform and educate the public, base workers and residents about continuing Environmental Management efforts at Edwards AFB. It currently has a circulation of 6,000, including about 2,000 subscribers.

Contents of the *Report to Stakeholders* are not necessarily the official view of, or endorsed by, the U.S. government, the Department of Defense, or the Department of the Air Force.



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Comments or questions should be directed to: Gary Hatch, 95 ABW/PAE, 5 E. Popson Ave., Bldg. 2650A, Edwards AFB, CA 93524-8060, (661) 277-1454. E-mail: [gary.hatch@edwards.af.mil](mailto:gary.hatch@edwards.af.mil)

**Report to  
STAKEHOLDERS**







## ARCHAEOLOGICAL FIND



**DISCOVERY** — Cole Parker a contract archaeologist at Edwards Air Force Base, is seen at right, with the largest pendant to date found on the base. Parker found the pendant while range riding during the weekend at an archaeological site. Range riders help protect archaeological sites from illegal activities.

# Contract archaeologist for base finds prehistoric pendant while on weekend range ride last December

**I**n what is being described as perhaps the best archaeological find yet at Edwards Air Force Base, a large pendant covered with faintly incised lines, shapes and multiple X marks was discovered near the base's southern boundary.

"Most of the artifacts we find are tools that tell us something about what people were doing here in the past," Base Historic Preservation Officer Richard Norwood said. "But not much is known about what prehistoric people might have been thinking. The pendant is a unique and interest-

ing find because it may give Environmental Management a clue about their system of knowledge and ability to record what was important and meaningful to them."

The pendant was found at a previously studied prehistoric site near the base's southern boundary by Cole Parker. An employee of contractor JT3/CH2M HILL, Parker made his find on Dec. 3, 2005, while doing weekend duty as a range rider, a program that monitors and protects cultural sites on the base.

"It's not unusual to miss something, even something this large and different

looking, when you study a site," Norwood said. "Rain, wind, vegetative cover, sunlight, human disturbance, all kinds of conditions can change so that an object that was once hidden, buried just below the surface, is suddenly revealed.

"Its size and the multiple lines and shapes that are incised, or scratched, on both its sides make the pendant unique to the base, and probably the Antelope Valley," Norwood said. "We've found smaller incised pendants, but nothing this large and complex."

See *Pendant*, page 7





**SEMI-BURIED ORDNANCE** — Unexploded ordnance (UXO), like the one found above, can come in all shapes and sizes. Ordnance that has been buried for a while can find its way to the surface eventually. Much of the UXO found in the Mojave Desert is from training during World War II.

## Environmental Restoration Program branches into Military Munitions Response Program

**E**dwards Air Force Base is on a mission to find and clean up leftover ordnance and chemical residue in areas that may have been used as bombing ranges in the 1930s and 40s. Part of the Military Munitions Response Program (MMRP), it allows land on a range to be used other than as a range.

Air Force project manager Paul Schiff is in charge of the MMRP cleanup effort at Edwards. “There are five MMRP areas located on base,” Schiff said. “These areas were not necessarily used as bombing ranges in the past, but were chosen because they are either occupied by people or not considered a target area for present or future bombing.”

These characteristics define the land as unused or closed ranges, which is the reason they are being investigated under the

MMRP. The MMRP areas on Edwards include Base Housing, the Air Force Research Laboratory, the former Jet Propulsion Laboratory, gate entry areas, shopping areas and office buildings.

With the formation of the Muroc Bombing and Gunnery Range in 1933, the vicinity of Edwards became a bomb range for military weapons. Edwards continues to be a flight test center, but the weapons’ cleanup is now regulated by the U.S. Environmental Protection Agency. Active bomb ranges have limited access and are cleaned up once a year.

“Edwards has been operating a successful cleanup program for over a decade,” Schiff said. “The same principles and approach will apply to weapons’ cleanup.” The MMRP includes an investigation process, identi-

fication of sites, cleanup proposals, public feedback and removal actions.

Cleanup for unexploded ordnance (UXO) did not exist until the 90s. With the MMRP in place, the Environmental Restoration Program (ERP) is able to look at land once used for historical military operations to determine if UXO are present and need to be cleaned up.

Unexploded ordnance is ordnance that did not explode or fire correctly. If disturbed or moved, these UXO could detonate.

The ERP began investigation of UXO in December 2005. “The information gathered from the investigation will help the ERP determine if any UXO are contained within our MMRP areas,” Schiff said. The investigation involved reviews of historical records, interviews and visual surveys.



Geographical technology that scans areas to see what is on or under the ground will also be used. Light Detection and Ranging, or LiDAR – which locates bomb craters and similar structures in the same manner as radar is one such technology. Light sent from an aircraft using LiDAR hits the ground and is reflected to the source. Changes in the light are analyzed to provide a clear picture of the ground's subsurface. Magnetometry uses magnetic fields to find subsurface disturbances and objects possibly buried 5- to 15-feet underground. However, these types of equipment don't necessarily have the capability to tell project managers if the object underground or on the surface is a weapon or a piece of scrap metal.

"To properly identify the object, ground samples have to be taken and the area has to be dug around," Schiff said. "In cases where

a weapon poses an eminent danger, steps will be taken for immediate removal." For most MMRP sites, evaluations and proposed cleanup steps will be reviewed by the public.

Analyses of soil samples and identification of the types of UXO found will help the DOD determine which sites are a greater threat to human health and the environment.

"The DOD has a limited amount of money to cover the MMRP being done at all of the Armed Forces areas," Schiff said. "During the nationwide process, the DOD will continue to prioritize and fund MMRP areas based on their findings. For example, the DOD would assign a higher priority to a site found near an area frequented by the general public as opposed to an area occupied by a few people who are trained to

recognize UXO.

"Not all UXO are armed with an explosive or charge. Some of the weapons dropped contain sand or other inert material, but you cannot tell by looking at the weapon if it contains sand or an explosive. It's better to be safe than sorry," Schiff said. "The general motto is 'If you did not drop it, do not pick it up!'"

Edwards is not alone in its mission to find UXO on unused or closed ranges on base. DOD is required by federal law to inventory and characterize its property across the nation. Results show the Air Force has more than 290 MMRP areas, not including other branches of the military like the Army and Navy.

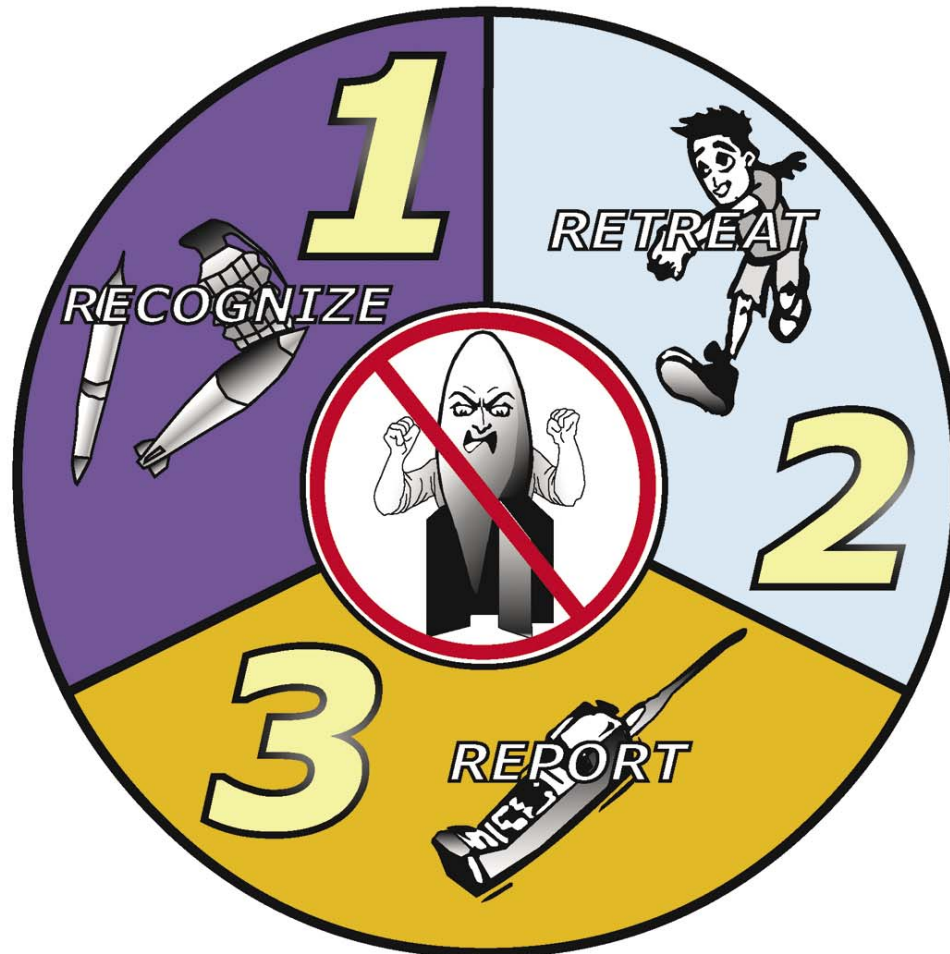


**LINEUP** — Found UXO is set together in a row to be transferred to a safer place for disposal.

If you encounter an object that looks like it might be UXO of any kind, follow these basic safety tips:

- When you see the object, stop.
- Do not move closer.
- Some ordnance explodes when motion is sensed.
- Never transmit radio frequencies such as a walkie-talkie or cell phone.
- Do not attempt to touch or move the object or the area surrounding it.
- Mark the general area where the object is located and notify the authorities immediately.
- Those who work on base should call Explosive Ordnance Disposal (EOD) workers at (661) 277-2162.
- Civilians should contact their local law enforcement agency or call 911.

# REMEMBER the 3 Rs



## of UXO Safety!

Graphic courtesy DENIX (<https://www.denix.osd.mil/denix/Public/Library/Explosives/UXOSafety/faqs.html>)

Unexploded ordnance comes in all shapes and sizes; like bombs, rockets, grenades and bullets. The object may not have any distinctive paint markings or appear rusted because of its exposure from being outdoors. Unexploded ordnance can be found above ground, partially buried or submerged in water, according to the UXO Safety Education Program Website from the Defense Environmental Network and Information eXchange (<https://www.denix.osd.mil/denix/Public/Library/Explosives/UXOSafety/faqs.html>).

Unexploded ordnance has been found in areas surrounding the base. Both Edwards and Fort Irwin have sent EOD workers to handle such finds. Land around the base has been used by the Navy and Marine Corps during World War II training. “Mojave used to be a Marine Corps Air Station during World War II,” said John O’Kane, retired remedial project manager from the California EPA’s Department of Toxic Substances Control. “Records indicate that the Navy once used the area around California City as a bombing range.”

Sites outside of active military installations are covered under the U.S. Army Corps of Engineers Formerly Used Defense Site (FUDS) Program. The funding for the FUDS Program, MMRP, and ERP comes from different sources of cleanup money. “The cleanup already taking place at Edwards AFB under the ERP will not be affected by the MMRP,” Schiff said. “The priorities set by the Remedial Project Managers, Restoration Advisory Board, and the Air Force will continue to drive each program separately.”

## PENDANT

From page 3

# Largest found to date at Edwards Air Force Base

The pendant measures  $3\frac{1}{4}$  inches wide by  $5\frac{3}{4}$  inches tall and is made of a flat green slate. It weighs just over a third of a pound. The edges of the stone have been smoothed and rounded by hand. Its slab-like surface has a semi polish. Two cone-shaped holes that were drilled by hand at the top of the rectangular-shaped pendant suggest it was attached to some kind of cord or thong and worn around the neck.

“The marks on both sides of the pendant were probably made by scraping a hard stone, like quartz, across the softer slate’s surface,” Norwood said. “The effect is more like crude note taking than art. None of the resulting marks are deep, making the pendant’s markings a bit hard to see.

“What all those lines and Xs mean is an open question. It may represent some kind of count, or tally, of things like seasons or events,” Norwood said. “To people living in the desert and traveling to different places, keeping track of the times when there might be a seasonal source of water or food available — fruit that ripened or migrating animals — would have been a matter of life or death. If you get somewhere and the food is not ready to eat or the water source is dried up, you’re in trouble. The pendant might represent an attempt to keep a record of where and when to go to certain places. But then it also could be a ceremonial object. We just don’t know right now.

“All explanations of the pendant’s purpose and use remain to be studied,” he said. “All we have now is an interesting and unique object and not much more.”

The pendant probably dates from the middle- to late-prehistoric period, which would make it about 1,000 years old, give or take several hundred years either way. According to Norwood, the pendant’s age can be inferred from the age of other items observed at the site and from the technology used to make it. Caliche, a mineral that dries and hardens to form a whitish crust simi-



**COMPOSITE**— This is a drawing of the marks that can be seen on the pendant that was found by an archaeologist. It is currently unclear what these markings might mean.

lar to cement, was found on the pendant’s surface. Caliche coating takes time to form. “The presence of caliche suggests that the pendant’s deposition date is consistent with these other objects,” Norwood said.

“The pendant is old enough where you can’t look at a living tribe today and relate it to their tradition,” Norwood said.

To learn more, the pendant might be compared to smaller but similar versions found in the region. Similarities and differences in such things as the method of

incising, the pattern of markings, and types or origins of stone material could help researchers unravel the pendant’s mystery. A better understanding of its informational value might also be gained by studying the mathematical relationships of so many lines and Xs in a row, for example.

“The pendant will certainly get the attention of anyone who has done studies in these areas or it could open a door to new studies,” Norwood said.



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**RAB Members****BORON**

Dara English (760) 762-6527 Home  
 dara.english@Borax.com (760) 762-7867 Work

**CALIFORNIA CITY**

Bob Smith (760) 373-4317 Home  
 bsmith@ccis.com

**LANCASTER**

Larry Hagenauer (661) 277-9133 Work  
 larry.hagenauer.ctr@edwards.af.mil  
 ALTERNATE: Frank Roberts (661) 723-6018 Work

**MOJAVE**

Victor Yaw (661) 824-2886 Home  
 vyaw@charter.net (661) 275-4296 Work

**NORTH EDWARDS**

Ruby Messersmith (760) 769-4357 Home  
 messersmith2@verizon.net

**ROSAMOND**

David Newman (661) 722-6433 Work  
 dnewman@ispwest.com  
 ALTERNATE: Leslie Uhazy (661) 256-8209 Home  
 luhazy@avc.edu (661) 722-6417 Work

**EDWARDS AFB**

**Housing**  
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**Main Base Air Base Wing**

David Schory (661) 277-4811 Work  
 david.schory@edwards.af.mil

**Main Base Test Wing**

Dean Baker (661) 277-5649 Work  
 dean.baker.ctr@edwards.af.mil

**NASA Dryden**

William Brandweiner (661) 276-3339 Work  
 William.Brandweiner@dfrc.nasa.gov

**North Base**

Vacant

**South Base**

Julie Newton (661) 275-0551 Work  
 julie.newton@edwards.af.mil

**AF Research Lab/  
Propulsion Directorate**

Milton McKay (661) 275-5191 Work  
 milton.mckay@edwards.af.mil

Published data and documents relating to the Environmental Restoration Program are available for public review in information repositories at four locations. The current information repositories are located in the cities of Boron, Lancaster and Rosamond, as well as Edwards AFB. They are updated when new documents are released.

If you have any questions about information in the repositories, please contact Gary Hatch, Environmental Public Affairs at (661) 277-1454 or through e-mail at gary.hatch@edwards.af.mil.



Location	Days and Hours of Operation	
<b>Edwards AFB Library</b> 5 W. Yeager Blvd. Building 6225 Edwards AFB, Calif. (661) 275-2665	Mon-Thurs	9:30 a.m. - 7 p.m.
	Fri	9:30 a.m. - 6 p.m.
	Sat & Sun	10:30 a.m. - 6 p.m.
<b>Kern County Public Library</b> Wanda Kirk Branch 3611 Rosamond Blvd. Rosamond, Calif. (661) 256-3236	Tue & Wed	Noon - 8 p.m.
	Thurs-Sat	10 a.m. - 6 p.m.
<b>Los Angeles County Public Library</b> 601 W. Lancaster Blvd. Lancaster, Calif. (661) 948-5029	Mon-Wed	10 a.m. - 8 p.m.
	Thurs & Fri	10 a.m. - 5 p.m.
	Sat	11 a.m. - 5 p.m.
<b>Col. Vernon P. Saxon, Jr. Aerospace Museum</b> 26962 Twenty Mule Team Road Boron, Calif. (760) 762-6600	Mon-Sun	10 a.m. - 4 p.m.



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